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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,232	11/14/2003	Arne W. Ballantine	PUG.0083C1US (792c)	2447

21906 7590 10/29/2008

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EXAMINER	
ALEJANDRO, RAYMOND	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
10/29/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/714,232	BALLANTINE ET AL.	
	Examiner	Art Unit	
	Raymond Alejandro	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/17/08*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *50-58* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *50-58* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 May 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/17/08 has been entered.

This paper is provided in reply to the amendment filed in connection with the above-referenced RCE. Applicant has not yet overcome the rejections under Section 102/103. Refer to the abovementioned amendment for substance of applicant's rebuttal arguments and remarks. Therefore, all pending claims remain rejected over the same ground of rejection as composed infra on the written record:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 50-58 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over the WO publication WO 01/15929 (heretofore the WO'929) (*for purposes of rejection, Yamada et al 6793027 is cited as it is an English equivalent of WO'929*).

As to claims 50-51:

Yamada et al disclose a hybrid system including a fuel cell (ABSTRACT). A hydrogen supplying device for supplying hydrogen for power generation is provided to the fuel cell unit 7a (COL 6, lines 11-25). Air (the oxidant) is supplied to the fuel cell (COL 9, lines 47-53). Using air and hydrogen, power generation is performed in the fuel cell (COL 9, lines 50-53).

A fuel cell controller 71 controls the fuel cell on the basis of the data from the controller 5; the fuel cell controller is provided with detection means for detecting the state of the fuel cell and comprise various temperature sensors S21 (*heat demand sensors*), a fuel cell voltage sensor S22 and a fuel cell current sensor S23 (COL 7, lines 44-55). Content of date includes information

such as temperature, voltage, current, error information and capacity, and control information such as output request (COL 11, lines 57-67).

An electromotive force control is performed based on the data (signals) from sensors S21-S23 and the detected data on the operating conditions, the desired flow rate of each switching valve is calculated by the fuel cell controller 71 based on the calculation results so as to adjust the quantity of hydrogen (COL 9, lines 29-45).

(***Emphasis added→***) Yamada et al disclose that communication data are sent from the controller 5 to the fuel cell controller 71 which controls the fuel cell 70 on the basis of the data from the controller 5; the fuel cell controller 71 is provided with detection means for detecting the state of the fuel cell 70; the detection means is comprised of various temperature sensors S21, a fuel cell voltage sensor S22 and a fuel cell current sensor S23; information from these sensors is stored in a memory in the fuel cell controller 71 to be entered in the vehicle controller 5 as required (COL 7, lines 44-53). Disclosed is that the fuel cell controller 71 is connected to the devices such as sensors, among others (COL 7, lines 65-68); and the fuel cell 70 is provided with temperature sensors; wherein the temperature of these components are controlled by the fuel ell battery controller 71 through temperature detection (COL 8, lines 1-5). Disclosed is that as a result of the flow control; the amount of hydrogen supplied to the fuel cell 70 can be regulated for electromotive force control (COL 9, lines 20-27); and the electromotive force control is performed as follows: required electromotive force is calculated by the controller 5 based on the data from sensors S21-S-23 and the detected data on the operating conditions from other various sensors; and the desired hydrogen flow rate of each valve is calculated by the controller 5 or the fuel cell controller 71 based on the calculation results (COL 9, lines 29-39). Further disclosed is

that the electromotive force generation is a heat development reaction (COL 10, lines 1-3). *Thus, flow rate of hydrogen is responsive to the conditions sensed by temperature sensor S21 and voltage/current sensors S22-S23 (sensors for power generation). In addition, since the electromotive force generation is a heat development reaction, such a generated heat is sensed by the foregoing sensors, and is proportional to the heat needed from the fuel cell so that it is indicative of the current thermal state of the fuel cell.*

As a result of flow control achieved, the amount of hydrogen supplied to the fuel cell can be regulated for electromotive force control, so that the electromotive force is controlled according to the amount of hydrogen supplied thereto (COL 9, lines 24-28). The output of the fuel cell is connected to the power regulating section for regulation purposes (COL 10, lines 43-47). *Thus, control of at least fuel flow is based on the heat generated by the fuel cell and the output of the fuel cell.*

Fuel cell unit 7 is determined to be abnormal when the detection value of any of the temperature sensor, fuel cell voltage sensor and fuel cell current sensor is excessively large or small beyond the range of normal detection values which are stored as detection data on abnormality in the memory of the fuel cell controller 71 (COL 12, lines 26-32).

(**NEW**) Yamada et al conceptualize a fuel cell system including a fuel cell unit 7, comprised mainly of a fuel cell and a reformer (COL 5, lines 64-65); a hydrogen supplying device 16 including **a burner 18** for supplying combustion air (*the burner might act as the heat exchanger*) (COL 6, lines 14-25); temperature sensors S21 acting as detection means (COL 7, lines 45-53). Clearly disclosed therein is that the fuel cell unit 7 comprises a reformer 103, **a shift converter 104** (*the shift converter might also act as the heat exchanger*); a selective

oxidation reactor 105 (*the oxidation reactor might also act as the heat exchanger*); **a collecting heat exchanger 107** and a controller 71 connected to the devices such as valves, pumps, and fans and sensors wherein the reformer 103, shift converter 104, selective oxidation reactor 105 and fuel cell 70 are provided with temperature sensors Tr, Tb, Ts, Tp and Tc which are controlled by the fuel cell battery controller 71 (COL 7, line 65 to COL 8, line 5). In this respect, it is further noted that burner pump 113 is activated through temperature detection by the temperature sensor Tb wherein the burner heats the evaporator 111 to vaporize the fuel mixture (COL 8, lines 5-20). Additionally, to the burner 110 is supplied surplus hydrogen from the fuel cell 70 through a line 201 for combustion wherein the combustion heat of the burner 101 vaporizes the primary fuel to maintain temperature (COL 8, lines 20-25). Moreover, the shift converter 104 and the oxidation reactor are cooled by a cooling fan 118 and 120 respectively in accordance with temperature detection by the temperature sensors Ts and Tp, respectively (COL 9, lines 4-6 & Col 9, lines 14-16). Yet further, to the fuel cell 70, water is supplied from the water tank 108 by a cooling and humidifying pump 122, and air is supplied from the moisture collection heat exchanger 107 by a pressurizing air pump 123 in accordance with temperature detection of the temperature sensor Tc (COL 9, lines 46-53). Water used in the fuel cell 70 and water produced by power generation exchanges heat with cooling air in the moisture collecting heat exchanger 107 and is returned to the water tank 108; the surplus hydrogen used for power generation in the fuel cell 70 is returned to the burner 110 of the reformer 103 through a valve 211 and a line 201 (COL 10, lines 26-33). *Thus, any one of the above-described device may represent the device thermally coupled to the fuel cell by the heat exchanger to receive thermal energy from the fuel cell, and being adapted to provide a heat demand signal through the*

sensors indicative of the device needing more thermal energy from the fuel cell. ***The devices described above are capable of generating or exchanging heat through combustion or reactions.*** *Additionally, in a different interpretation, since the present claims do not CLEARLY stipulate whether heat is added or removed, cooling is considered to mean lack of heat, as such, any activity including cooling might also read on applicant's limitation of "needing more thermal energy" to either increase or decrease the temperature thereof. It is unknown or poorly stated whether the temperature of the device is either increased or decreased. The meaning of the term "**device**" within the recitation is also uncertain. The term "device" therefore has been construed as any device.*

Examiner's note: *as to the limitation "**adapted to**", it is contended that this limitation does not distinguish over prior art because the recitation that an element/feature/member is "adapted to" performing a function is not a positive limitation but only requires the ability to so perform. See Hoffer v. Microsoft Corp., 405 F.3d 1326, 1329, 74 USPQ2d 1481, 1483 (Fed. Cir. 2005) & Minton v. Nat 'l Ass 'n of Securities Dealers, Inc., 336 F.3d 1373, 1381, 67 USPQ2d 1614, 1620 and MPEP 2111.04.*

As to claims 52-58:

Yamada et al disclose that fuel cell unit 7 is determined to be abnormal when the detection value of any of the temperature sensor, fuel cell voltage sensor and fuel cell current sensor is excessively large or small beyond the range of normal detection values which are stored as detection data on abnormality in the memory of the fuel cell controller 71 (COL 12, lines 26-32). An electromotive force control is performed based on the data (signals) from sensors S21-S23 and the detected data on the operating conditions, the desired flow rate of each switching

valve is calculated by the fuel cell controller 71 based on the calculation results so as to adjust the quantity of hydrogen (COL 9, lines 29-45). As a result of flow control achieved, the amount of hydrogen supplied to the fuel cell can be regulated for electromotive force control, so that the electromotive force is controlled according to the amount of hydrogen supplied thereto (COL 9, lines 24-28). The output of the fuel cell is connected to the power regulating section for regulation purposes (COL 10, lines 43-47). *Thus, control of at least fuel flow is based on the heat generated by the fuel cell and the output of the fuel cell. In this case, it is noted that the controller of Yamada et al is capable of performing the claimed function based on the particular sensed conditions. Thus, the controller of Yamada et al inherently controls the fuel cell system as instantly claimed in claims 52-58. In other words, the examiner is asserting inherency based on the structural and functional similarities between the disclosed controller and applicant's controller.* ***In re Schreiber, 128 F.3d 1473, 44 USPQ2d 1429 (Fed. Cir. 1997).***

As per ***MPEP 2112 Requirements of Rejection Based on Inherency; Burden of Proof:***

"V. ONCE A REFERENCE TEACHING PRODUCT APPEARING TO BE SUBSTANTIALLY IDENTICAL IS MADE THE BASIS OF A REJECTION, AND THE EXAMINER PRESENTS EVIDENCE OR REASONING TENDING TO SHOW INHERENCY, THE BURDEN SHIFTS TO THE APPLICANT TO SHOW AN UNOBVIOUS DIFFERENCE"

"[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency' under 35 U.S.C. 102, on prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that required with respect to product-by-process claims. ***In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977))***."

- The evidence or reasoning tending to show inherency is relied upon Yamada et al's disclosure that that fuel cell unit 7 is determined to be abnormal when the detection value of any of the temperature sensor, fuel cell voltage sensor and fuel cell current sensor is excessively large or small beyond the range of normal detection values which are stored as detection data on abnormality in the memory of the fuel cell controller 71 (COL 12, lines 26-32). This provides a reasonable basis to recognize that variations on temperature (heat), voltage (output) or current controls the fuel flow, and therefor the controller of Yamada et al is capable of performing the claimed function.

Response to Arguments

5. Applicant's arguments filed 10/17/08 have been fully considered but they are not persuasive. The Examiner is still unpersuaded.

6. The main contention of applicant's argument is now premised on the assertion that "*Yamada merely discloses a temperature sensor S21 that merely indicates when a fuel cell unit 7 is behaving abnormally. Yamada, 12:26-32. However, there is no teaching or suggestion in Yamada that the temperature sensor S21 generates a heat demand signal from a device that is thermally coupled by a heat exchanger to a fuel cell to receive thermal energy from the fuel cell*". Well, in reply, a point totally overlooked by the applicant is that in the absence of a well-defined and structurally or materially described device such a claimed device can be anything capable of providing a heat demand signal indicative of the device needing more thermal energy and/or an increase in temperature. Consequently, it should be clear and apparent that temperature sensor S21 and/or its related supporting mechanism, alone or collectively, can act as the claimed

device because it is capable of receiving thermal energy from the fuel cell (either by heat convection or heat conduction) and is capable of providing a heat demand signal indicative of the device (as a whole or as part of entire system itself) needing more thermal energy therefrom.

There is no reason to believe that when the temperature sensor S21 is fully incorporated into and integrated with the remaining system components to form a system as a whole said temperature sensor S21 would neither receive the generated thermal energy nor provide a heat demand signal indicative of the current system temperature. Note that temperature is directly correlated to heat by thermodynamic laws. Unless applicant positively excludes temperature sensors, thermo-couples, temperature measuring devices and the like from the claimed invention, it is not unreasonable and it is plausible to say that the device of the art of record still reads on applicant's structurally, materially and even functionally undefined device (←***emphasis supplied***). Notice that NO exclusionary proviso or restriction prevents the examiner from giving the disclosed temperature sensor and its related supporting mechanism (components) the connotation of being called "a device", for instance, applicant's claimed device.

The upshot of the examiner's informed resolution is based on the fact that the temperature sensor is a device connected to or integrated with disclosed system, that it is capable of sensing temperature and sending a signal in response to the sensed temperature, that it indicates when a fuel cell unit is behaving abnormally (said abnormal behavior ranging from low temperatures to high temperatures) and that it is conceivable to conclude that that temperature sensor S21 and/or its related supporting mechanism, each one alone or collectively, might be representative of applicant's undefined device.

7. Applicant is of the opinion that "*there is no teachings or suggestion in Yamada that the temperature sensors generates a heat demand signal from a device that is thermally coupled by a heat exchanger to a fuel cell to receive thermal energy from the fuel cell*". In reply, the examiner believes that applicant's contention is technically inaccurate in the context of the invention in question which is open to interpretation and has left unspecified many limitations, or essential matter from a functional or structural perspective. An explanation of the applicability of the prior art Yamada et al in view of the unclear and uncertain components of the claimed invention follows infra.

Any one of the devices described below may represent the device ***thermally coupled*** to the fuel cell by the heat exchanger to receive thermal energy from the fuel cell, and being *adapted to* provide a heat demand signal through the sensors indicative of the device needing more thermal energy from the fuel cell. The devices described above are capable of generating or exchanging heat through combustion or reactions. Additionally, in a different interpretation, since the present claims do not CLEARLY stipulate whether heat is added or removed, cooling is considered to mean lack of heat, as such, any activity including cooling might also read on applicant's limitation of "needing more thermal energy" to either increase or decrease the temperature thereof. It is unknown or poorly stated whether the temperature of the device is either increased or decreased.

Moreover, the term "***thermally couples***" means nothing but just being able to transfer (either receive or supply) heat. The meaning of the term "***device***" within the recitation is also uncertain. The term "*device*" therefore has been construed as any device in thermal communication with the fuel cell (*e.g. the reformer, the shift converter, the oxidation reactor, the*

heat exchanger itself, the fuel cell components per se, the valves, the pumps, the fans and the sensors themselves). And Yamada et al disclose plenty of devices or scenarios where devices are thermally coupled to the fuel cell and heat demand signal are generated for their respective operations. **It bears noting that a fuel cell assembly generates power and HEAT. Thus, the fuel cell assembly is designed to have devices responsive to both the power and heat generated.**

Yamada et al conceptualize a fuel cell system including a fuel cell unit 7, comprised mainly of a fuel cell and a reformer (COL 5, lines 64-65); a hydrogen supplying device 16 including ***a burner 18*** *for supplying combustion air (the burner might act as the heat exchanger) (COL 6, lines 14-25); temperature sensors S21 acting as detection means (COL 7, lines 45-53). Clearly disclosed therein is that the fuel cell unit 7 comprises* ***a reformer 103, a shift converter 104*** *(the shift converter might also act as the heat exchanger);* ***a selective oxidation reactor 105*** *(the oxidation reactor might also act as the heat exchanger);* ***a collecting heat exchanger 107*** *and a controller 71 connected to the devices such as* ***valves, pumps, and fans and sensors*** *wherein the reformer 103, shift converter 104, selective oxidation reactor 105 and fuel cell 70 are provided with* ***temperature sensors Tr, Tb, Ts, Tp and Tc*** *which are controlled by the fuel cell battery controller 71 (COL 7, line 65 to COL 8, line 5). In this respect, it is further noted that burner pump 113 is activated through temperature detection by the temperature sensor Tb wherein the burner heats the evaporator 111 to vaporize the fuel mixture (COL 8, lines 5-20). Additionally, to the burner 110 is supplied surplus hydrogen from the fuel cell 70 through a line 201 for combustion wherein the combustion heat of the burner 101 vaporizes the primary fuel to maintain temperature (COL 8, lines 20-25). Moreover, the shift converter 104 and the oxidation reactor are cooled by a cooling fan 118 and 120 respectively in accordance with temperature detection by the temperature sensors Ts and Tp, respectively (COL 9, lines 4-6 & Col 9, lines 14-16). Yet further, to the fuel cell 70, water is supplied from the water tank 108 by a cooling and humidifying pump 122, and air is supplied from the moisture collection heat exchanger 107 by a pressurizing air pump 123 in accordance with temperature detection of the temperature sensor Tc (COL 9, lines 46-53). Water used in the fuel cell 70 and water produced by power generation exchanges heat with cooling air in the moisture collecting heat exchanger 107 and is returned to the water tank 108; the surplus hydrogen used for power generation in the fuel cell 70 is returned to the burner 110 of the reformer 103 through a valve 211 and a line 201 (COL 10, lines 26-33).*

(***Emphasis added***) It is useful to note that a fuel cell system by nature generates power and HEAT, therefore, there must be responses associated to both the power and heat generated by the fuel cell system; and applicant has not yet provided a detailed explanation of how such

responses affect or do not affect, read or do not read on applicant's devices/signal/heat demand embodiment(s).

For this reason, the preponderance of evidence still points toward the rejection direction as shown herein (*patentable* ←----------→ *rejection*)

8. As to the limitation "*adapted to*", it is contended that this limitation does not distinguish over prior art because the recitation that an element/feature/member is "*adapted to*" performing a function is not a positive limitation but only requires the ability to so perform. See Hoffer v. Microsoft Corp., 405 F.3d 1326, 1329, 74 USPQ2d 1481, 1483 (Fed. Cir. 2005) & Minton v. Nat 'l Ass 'n of Securities Dealers, Inc., 336 F.3d 1373, 1381, 67 USPQ2d 1614, 1620 and MPEP 2111.04.

9. With respect to the WO'929 (Yamada et al), applicant has contended that it does not "*teach or suggest a controller of a fuel cell system that controls at least one of a fuel flow and oxidant flow to of a fuel cell based on a heat demand signal that is generated by a device that is thermally coupled to the fuel cell and indicates more heat being needed from the fuel cell*". It appears that applicant contends that Yamada et al's temperature sensor is incapable of doing so. In response, the Examiner largely disagrees. As best understood, a sensor senses and transmits the sensed condition or parameter to a device (such as controller) receiving a signal. Therefore, a temperature sensor as the one disclosed by Yamada et al (*i.e. temperature sensor S21*) would sense a temperature and transmit the sensed temperature to that device for comparing and determining whether more or less heat (by using heat transfer means) is necessary to support operation of the fuel cell system. Engineering textbook materials addressing heat transfer phenomena (thermal energy concepts) and its detection and utilization define and shows the

above-mentioned concepts. In this instances, the fuel cell and temperature sensor S21 of Yamada et al constitute applicant's fuel cell and the device thermally coupled thereto and capable of generating the heat demand signal. Thus, the Examiner does not comprehend applicant's contention against Yamada et al.

On a related note concerning the above discussion, it bears noting that the limitation "capable of" is not a positive limitation, it only requires the ability to so perform. In furtherance of applicant's incorrect characterization of the claimed invention vs. the prior art, Yamada et al' temperature sensor S21 is capable of generating such a heat demand signal based on the sensed temperature regardless of whether the heat demand signal indicates more heat is positively needed. That is how the claim language is being interpreted in view of applicant's selective language defining his invention.

10. Concerning applicant's arguments against the JP'365, applicant has expressed that because *"[the] temperature sensor 6...is a catalyst temperature sensor that is indicative of a temperature of a reformer... such a signal does not indicate more heat being needed from a fuel cell by a device that is thermally coupled to the fuel cell*". As a clarifying matter, applicant is currently claiming "a fuel cell system" as a whole (See preamble of claims 50-58). As such, in its broadest reasonable interpretation, the Examiner is taking applicant's fuel cell to include ANY component or device of the claimed FUEL CELL SYSTEM. Those of ordinary skill in the art clearly recognize that a reformer is an essential or primary component (used for reforming hydrocarbon-based materials into a hydrogen-rich material → the fuel) of the fuel cell system. Hence, the reformer of the JP'365, as part of the fuel cell, comprising the catalyst temperature sensor is no different from applicant's fuel cell system comprising a fuel cell component

thermally coupled to a device. It seems that applicant intends to argue that a fuel cell unit per se or a single unitary fuel cell itself is the same as applicant's fuel cell system (fuel cell). In this respect, the Examiner largely disagrees. Therefore, this prior art of record still reads on applicant's invention.

11. The gist of applicant's contention is premised on the assertion that "there is no teaching or suggestion in the reference regarding a heat demand signal that is received from a device that is thermally coupled to a fuel cell for purposes of indicating a heat demand" and "there is no teaching or suggestion in the reference regarding controlling either a fuel or an oxidant flow based on such a heat demand signal". However, the examiner largely disagrees with applicant's contention for the reasons below.

(**Emphasis added→**) Yamada et al disclose that communication data are sent from the controller 5 to the fuel cell controller 71 which controls the fuel cell 70 on the basis of the data from the controller 5; the fuel cell controller 71 is provided with detection means for detecting the state of the fuel cell 70; the detection means is comprised of various temperature sensors S21, a fuel cell voltage sensor S22 and a fuel cell current sensor S23; information from these sensors is stored in a memory in the fuel cell controller 71 to be entered in the vehicle controller 5 as required (COL 7, lines 44-53). Disclosed is that the fuel cell controller 71 is connected to the devices such as sensors, among others (COL 7, lines 65-68); and the fuel cell 70 is provided with temperature sensors; wherein the temperature of these components are controlled by the fuel ell battery controller 71 through temperature detection (COL 8, lines 1-5). Disclosed is that as a result of the flow control; the amount of hydrogen supplied to the fuel cell 70 can be regulated for electromotive force control (COL 9, lines 20-27); and the electromotive force control is

performed as follows: required electromotive force is calculated by the controller 5 based on the data from sensors S21-S-23 and the detected data on the operating conditions from other various sensors; and the desired hydrogen flow rate of each valve is calculated by the controller 5 or the fuel cell controller 71 based on the calculation results (COL 9, lines 29-39). Further disclosed is that the electromotive force generation is a heat development reaction (COL 10, lines 1-3).

Thus, flow rate of hydrogen is responsive to the conditions sensed by temperature sensor S21 and voltage/current sensors S22-S23 (sensors for power generation). In addition, since the electromotive force generation is a heat development reaction, such a generated heat is sensed by the foregoing sensors, and is proportional to the heat needed from the fuel cell so that it is indicative of the current thermal state of the fuel cell.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Raymond Alejandro/
Primary Examiner, Art Unit 1795